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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/699,881	HU, DARWIN	
	Examiner	Art Unit	
	WILLIAM C. STOREY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 36-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 36-38* is/are rejected.

7)☒ Claim(s) *3, 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method of claim 1, wherein the object has both sides, and the first contact image sensor module and the second contact image sensor module are disposed face to face to scan the both sides of the object simultaneously, and wherein the image of the object includes respective images of both sides of the object must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claim 36 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the optical scanner

comprising: a first contact image sensor module; a second contact image sensor module operatively connected to the first contact image sensor module in series, wherein the first contact image sensor module is placed in a face-up manner and the second contact image sensor module is placed in a face\- down manner so that a double sided object is scanned simultaneously by the first contact image sensor module and the second contact image sensor module, and wherein first scanned image signals from the first contact image sensor module and second scanned image signals from the second contact image sensor module are read out in sequence and integrated in a computing device executing a software module to recover two images of the double sided object must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The amendment filed 3/13/2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amendment to the specification attempts to change "horizontally" to "oppositely;" however, these terms encompass different interpretations and do not constitute an equal exchange.

Applicant is required to cancel the new matter in the reply to this Office Action.

5. The amendment filed 3/13/2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amendment to the specification attempts to change “an image processing software" to “an image processing module or software application.” An image processing module may be interpreted as not being software, and as such, the amendment does not constitute an equal exchange.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

6. Claim 3 is objected to because of the following informalities: "An internal counter therein the inter counter" is improper. The examiner will assume a period to be placed after therein. Appropriate correction is required.

7. Claim 7 is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim7 refers to "wherein the object has both sides." Saying both sides inherently refers to two sides; however, two sides have not been defined in the dependency structure associated with this claim. The examiner will assume the applicant to mean "wherein the object has a front and a back side." Accordingly, other similar occurrences of "both sides" should be changed to correlate to front and back side, as well.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 7, 9, 37, & 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is not support for “oppositely.”

11. Claims 7 & 37-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim says that the two modules scan both sides of the object simultaneously; however, this is in direct contradiction with the specification which reads that in respect to the case of a double-sided document (pg. 12, line 24 of original filing), "contact image-sensing modules operate sequentially” (pg. 13, line 1 of original filing). The specification does not say that the scanning modules operate simultaneously, but rather, sequentially (one after another).

12. The term "oppositely" in claim 9 is a relative term which renders the claim indefinite. The term "oppositely" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear as to what being disposed oppositely with respect to each other is supposed to encompass. Please specify. Being disposed horizontal to each other, for instance, would show two sensors to be located opposite each other.

Claim Rejections - 35 USC § 103

13. Claims 1, 2, 5, 6, 7, 9, 10, 15, & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (US 6327057), hereinafter referred to as Kawahara, in view of Rasmusen (US 20030138167) and Chen (20040252355).

Regarding claim 1, Kawahara discloses a method of operating a concatenated contact image-sensing module scanner to scan an object (column 2, lines 18-20 and figure 1b. More contact type linear image sensors could be connected in a similar fashion. Col. 1, lines 62-67 disclose the linear image sensor IC comprising a light-receiving element array having a plurality or light receiving elements for reading picture (object) information and the abstract discloses that the picture signal is read out and output (to scan an object).), comprising: providing a first contact image sensor module for executing a first document reading session through a trigger of a start pulse (column 2, lines 4-8 and figure 1a), and then the first contact image sensor module outputting a corresponding first scanned image signal (column 2, lines 10-14 and figure 1a); providing a second contact image sensor module operatively connected to the first contact image sensor module for executing a second document reading session and then the second contact image sensor module outputting a corresponding second scanned image signal (similar to disclosed above for sensor 1; shown connected in figure 1b); wherein the first and the second scanned image signals are selected to be outputted sequentially (figure 1b and column 2, lines 22-25).

However, Kawahara did not distinctly disclose the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶14 & 15 disclose the stitching being done from multiple contact image sensors. ¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the arrangement of the sensors provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Kawahara disclosed image sensors sending out the outputs from the sensors sequentially as the output of one sensor initiates the next. Sending picture information from sensors to a computer via a computer interface to interact with software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (¶16). In addition, it is well known to

those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, the computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

In addition, Chen provides additional motivation for outputting signals from multiple contact image sensors via a computer interface. ¶15 discloses the outputs for the front and back side images to be send to an image processing device such as a computer. Inherently, the transmission must be done via an interface to a computing device. Fig. 1, ¶21 &9-10 disclose that the modules for scanning the images may be contact image sensor modules. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide outputting signals from multiple contact image sensors via a computer interface for the purpose of allowing

for the picture data from the multiple sensors to be viewed in a digital state in order to check for scanning error.

Regarding claim 2, the claim inherits everything as applied above for claim 1. In addition, Kawahara discloses the method of claim 1, further comprising providing a first end pulse outputted from the first image sensor module to the second contact image sensor module for triggering an execution of the second document reading session (figure 1b and column 2, lines 22-25).

Regarding claim 5, Kawahara discloses providing the start pulse to the first contact image sensor module (col. 2, lines 5-10, fig. 1a-1b, disclose a start pulse input SI.) It is inherent that the start pulse come from somewhere. The start pulse may be said to come from a timing generator.)

Regarding claim 6, Kawahara discloses everything as applied above for claim 1. In addition, Kawahara discloses the method of claim 1, wherein the first contact image sensor module further outputs a first end pulse to the second contact image sensor module as the first document reading session is finished, for triggering an execution of the second document reading sessions (figure 1b and column 2, lines 22-25).
Regarding claim 8, Kawahara discloses an optical scanner comprising: a concatenated contact image-sensing module having at least first and second contact image sensor modules each operatively connected to another in series (column 2, lines 18-20 and figure 1b. More contact type linear image sensors could be connected in a similar fashion.); and a timing generator, providing a clocking signal to each of the first and second contact image sensor modules (fig. 1b discloses a clk (clocking signal) being

provided to each of the plurality of linear image sensors (first and second contact image sensor modules. It is inherent that the clock signal come from somewhere; the clock signal may be said to come from a timing generator.), for providing a start pulse into the first contact image sensor module to trigger a first document reading session thereof and output a first scanned image signal ((col. 2, lines 5-10, fig. 1a-1b, disclose a start pulse input SI.) It is inherent that the start pulse come from somewhere. The start pulse may be said to come from a timing generator. As a box may be drawn around anything and given a name, the start pulse and the clock signal may both come from the timing generator.), wherein the second image sensor module is caused to perform a second document reading session once triggered (figure 1b, col. 2, lines 1-17 disclose start input si and output so. Fig. 1b shows the so from a preceding sensor acting as a start pulse for the following sensor.) and outputting a second scanned image signal, wherein the first and the second contact image sensor modules are triggered sequentially (figure 1b and column 2, lines 22-25) and the first and the second scanned image signals are selected to be outputted sequentially (figure 1b and column 2, lines 22-25, as the pictures signals are read out in sequence, the image signals are selected by the sequential triggering to be output sequentially.).

However, Kawahara did not distinctly disclose the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶14 & 15 disclose the

stitching being done from multiple contact image sensors. ¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the arrangement of the sensors provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Kawahara disclosed image sensors sending out the outputs from the sensors sequentially as the output of one sensor initiates the next. Sending picture information from sensors to a computer via a computer interface to interact with software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (¶16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware

processing, the computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

In addition, Chen provides additional motivation for outputting signals from multiple contact image sensors via a computer interface. ¶15 discloses the outputs for the front and back side images to be send to an image processing device such as a computer. Inherently, the transmission must be done via an interface to a computing device. Fig. 1, ¶21 &9-10 disclose that the modules for scanning the images may be contact image sensor modules. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide outputting signals from multiple contact image sensors via a computer interface for the purpose of allowing for the picture data from the multiple sensors to be viewed in a digital state in order to check for scanning error.

Regarding claim 9, Kawahara discloses everything as applied above for claim 8. In addition, Kawahara discloses the optical scanner of claim 8, wherein the first contact image sensor module and the second contact image sensor module are disposed oppositely with respect to each other, wherein the first and the second contact image sensor modules are operated sequentially (figure 1b. Image sensors (first and second contact image sensor modules) that are disposed "oppositely" with respect to each other are shown. The addition of more or a reduction to less of sensors does not make a claim patentably distinct. The general concept is taught.).

Regarding claim 10, the claim inherits everything as applied above for claim 9. The sensors in the fig. 1b are shown to operate sequentially as disclosed previously.

Regarding claim 15, Kawahara discloses everything as applied above for claim 8. In addition, Kawahara discloses the optical scanner of claim 8, wherein the first and the second contact image sensor modules output a first and a second end pulses to the second and a subsequent contact image sensor module, if there is one, in order to trigger the second and the subsequent contact image sensor modules sequentially (figure 1a and 1b, column 2, lines 10-14 and 22-25.).

Regarding claim 16, the claim inherits everything as applied above for claim 8. It was disclosed in claim 8 sending the output via a computer interface. This reads on the claim.

14. Claims 7 & 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 20040252355) in view of admitted prior art and Rasmusen.

Regarding claim 7, as claim 7 recites limitations that are mutually exclusive to other embodiments claimed (i.e. the sensor modules can't operate sequentially *and* simultaneously), a redefinition of limitations within claim 1 may have to be made herein with respect to claim 7. Chen discloses a method of operating a concatenated contact image-sensing module scanner (¶21) to scan an object (¶9 discloses scanning the front and back of a document (object)), the method comprising:

providing a first contact image sensor module for executing a first document reading session through a trigger of a start pulse (¶21 disclosed the system such as in fig. 1 to used contact image sensors for the modules. One of the top or bottom modules may thus read on contact image sensor module. As it had previously been disclosed that the system scans documents (document reading session), it is inherent that the contact image sensor receive some kind of start pulse as is well known for contact image sensors. In addition, providing further motivation is the applicants admitted prior art for a contact image sensor to have a start pulse input to it (fig. 2, lines 1-10), which acts as a trigger.),

and then the first contact image sensor module outputting a corresponding first scanned image signal (¶ 9,10 disclose the scanning of a front and back side by two different scanning modules and signals are sent out from the reading of the document, thus, one of the front or back side image signal that was read may read on claimed first scanned image signal).;

providing a second contact image sensor module operatively connected to the first contact image sensor module (¶9, 10 disclose that the two sensors are connected

(operatively connected) for sending a signal from the top image-reading module to the bottom image-reading module) for executing a second document reading session (as disclosed above, the two modules each scan one side of the object) and then the second contact image sensor module outputting a corresponding second scanned image signal (disclosed previously), wherein the first and the second scanned image signals are selected to be outputted sequentially (¶20 discloses that the bottom circuit may output the digital front-side signal and the digital back-side signal in sequence) via an interface to a computing device (¶15 discloses the outputs for the front and back side images to be send to an image processing device such as a computer. Inherently, the transmission must be done via an interface to a computing device.)

However, Chen did not distinctly disclose the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶14 & 15 disclose the stitching being done from multiple contact image sensors. ¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the overlapping arrangement provides an improvement, and as the correction is merely for the

improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Chen disclosed the image signals being output sequentially. Sending picture information from sensors to a computer via a computer interface to interact with software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (¶16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, the computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object, as

taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

Regarding claim 37, Chen discloses an optical scanner comprising: a first contact image sensor module (¶21 disclosed the system such as in fig. 1 to use contact image sensors for the modules. One of the top or bottom modules may thus read on contact image sensor module); a second contact image sensor module operatively connected to the first contact image sensor module in series (¶21 disclosed the system such as in fig. 1 to use contact image sensors for the modules. The other sensor may read on claimed second contact image sensor module. Fig. 1, ¶9,10 disclose that the image signal from the top module is connected and sent to the bottom circuit, which is operatively connected to the bottom module. The connection is in series.), wherein the first contact image sensor module is placed in a face-up manner and the second contact image sensor module is placed in a face- down manner so that a double sided object is scanned simultaneously by the first contact image sensor module and the second contact image sensor module (It is inherent that the sensors according to their relationship in figure 1, be oriented in a face-up and face-down manner in order to scan the front side image and the back side image of a document simultaneously.), and wherein first scanned image signals from the first contact image sensor module and second scanned image signals from the second contact image sensor module are read out in sequence (¶20 discloses the back-side and front-side signals (image signals) are

output (read out) in sequence.). Chen discloses in ¶15 that scanned image results of the two sides of a scanned document may be output to a computer (computing device).

However, Chen did not distinctly disclose the outputs being integrated in a computing device executing a software module to recover two images of the double sided object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶14 & 15 disclose the stitching being done from multiple contact image sensors. ¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the overlapping arrangement provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Chen disclosed the image signals being output sequentially. Sending picture information from sensors to a computer via a computer interface to interact with

software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (¶16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing the outputs being integrated in a computing device executing a software module to recover two images of the double sided object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

Regarding claim 38, the claim inherits everything as applied above for claim 37. In addition, Chen discloses converting the read image signals of the sides of the document from analog form to digital form (¶9-10). Inherently, there must be at least one analog-to-digital converter in order to have these actions accomplished.

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara, Rasmusen, and Chen as applied to claim 8 above, and further in view of Hasegawa et al. (US 6678076), hereinafter referred to as Hasegawa.

Regarding claim 13, the claim inherits everything as applied above for claim 8. Kawahara disclosed an analog switch used to output the contact image sensor's outputs. However, Hasegawa may provide an example more suited to the invention described in the specification.

In a similar field of endeavor, Hasegawa discloses a switch controlling output. In addition, Hasegawa discloses an analog switch operatively connected to the first and the second contact image sensor modules for receiving the first and the second scanned image signals (fig. 3). Hasegawa discloses selecting and then outputting one of the first and the second scanned image signals (col. 6, lines 43-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara, Rasmusen, and Chen by specifically providing an analog switch operatively connected to the first and the second contact image sensor modules for receiving the first and the second scanned image signals, and selecting and then outputting one of the first and the second scanned image signals., as taught by Hasegawa, for the purpose of providing greater control.

16. Claims 3, 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara, Rasmusen, Chen, and Hasegawa as applied to claim 1 and/or 13 above, and further in view of Yokochi (20040012830).

Regarding claim 3, the claim inherits everything as applied above for claim 1. However, Kawahara, Rasmusen, and Chen did not distinctly disclose an analog switch for receiving the first and the second scanned image signals.

In a similar field of endeavor, Hasegawa discloses a switch controlling output. In addition, Hasegawa discloses an analog switch for receiving the first and the second scanned image signals (fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara, Rasmusen, and Chen by specifically providing an analog switch for receiving the first and the second scanned image signals, as taught by Hasegawa, for the purpose of providing more control.

In addition, Hasegawa, Kawahara, Rasmusen, and Chen did not distinctly disclose wherein the analog switch further includes an internal counter therein and the internal counter sets a predetermined period of time in order to have the analog switch to select and output one of the first and the second scanned image signals in a sequential manner.

In a similar field of endeavor, Yokochi discloses control of a selector for image data output from multiple sources; the selection signal switched based on a predetermined time. In addition, Yokochi discloses at ¶89, fig. 1 a selector switching which input of image data to output. The multiple inputs are outputs from a CCD sensor (first and second scanned image signals). ¶92 discloses the outputs of the CCD sensor being pixel signals, which is commonly known to regard image signals. CCDs are well known to scan images. The selector is switch based on a command output every

predetermined time. A predetermined time is inherently set because it is predetermined. Although Yokochi did not distinctly disclose an internal counter for setting a predetermined time, it is well known for devices to have an internal counter (internal counter), and as an external counter is taught (for the predetermined time), a box may be drawn around anything and, thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a counter being internal for the purpose of having a nice interconnected package without the need for an extra external connection for a counter. The selector selects and outputs one of the CCD outputs at a time, and thus, the signals are selected and output in a sequential manner.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hasegawa, Kawahara, Rasmusen, and Chen by specifically providing wherein the analog switch further includes an internal counter therein and the internal counter sets a predetermined period of time in order to have the analog switch to select and output one of the first and the second scanned image signals in a sequential manner, for the purpose of providing more control.

Regarding claim 14, the claim inherits everything as applied above for claim 13.

However, the previous disclosures of Kawahara, Rasmusen, Chen, and Hasegawa did not distinctly disclose wherein the analog switch further includes an internal counter for setting a predetermined period of time in order to select and then output one of the first and the second scanned image signals within the predetermined period of time duration.

In a similar field of endeavor, Yokochi discloses control of a selector for image data output from multiple sources; the selection signal switched based on a predetermined time. In addition, Yokochi discloses at ¶89 a selector switching which input of image data to output. The multiple inputs are outputs from a CCD sensor (first and second scanned image signals). ¶92 discloses the outputs of the CCD sensor being pixel signals, which is commonly known to regard image signals. CCDs are well known to scan images. The selector is switch based on a command output every predetermined time. A predetermined time is inherently set because it is predetermined. Although Yokochi did not distinctly disclose an internal counter for setting a predetermined time, it is well known for devices to have an internal counter (internal counter), and as an external counter is taught (for the predetermined time), a box may be drawn around anything and, thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a counter being internal for the purpose of having a nice interconnected package without the need for an extra external connection for a counter. As the disclosure of Yokochi says that the signal is switched and outputted every predetermined time, it is inherent that a signal is selected and output within the predetermined period of time duration.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures of Kawahara, Rasmusen, Chen, and Hasegawa by specifically providing wherein the analog switch further includes an internal counter for setting a predetermined period of time in order to select and then output one of the first and the second scanned image signals within the

predetermined period of time duration., as taught by Yokochi, for the purpose of providing more control.

17. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Apperson et al. (US 6079624), hereinafter referred to as Apperson.

Regarding claims 20 & 21, Kawahara discloses everything as applied above for claim 18 & 20, respectively. However, Kawahara fails to disclose the light source as an invisible light: as an infrared or ultraviolet light. However, the examiner maintains that it was well known in the art to provide the light source as an invisible light: as an infrared or ultraviolet light, as taught by Apperson.

In a similar field of endeavor, Apperson discloses a data processing form using a scanning apparatus. In addition, Apperson discloses the light source as an invisible light: as an infrared or ultraviolet light. Apperson discloses using infrared light emitting diodes coupled with respective infrared sensors for use in a scanner (column 9, lines 12-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing the light source as an invisible light: as an infrared or ultraviolet light, as taught by Apperson, for the purpose of detecting marks or codes in a scan and providing greater versatility.

18. Claims 4, 11, 12, 17, & 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara and Rasmusen in view of well known prior art (MPEP 2144.03).

Regarding claim 4, Kawahara, Rasmusen, and Chen disclose everything claimed, as applied above (see claim 1); however, Kawahara, Rasmusen, and Chen did not distinctly disclose the interface being a USB interface. However, the examiner takes official notice of the fact that it was well known in the art to provide an interface being a USB interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara, Rasmusen, and Chen by specifically providing an interface being a USB interface, for the purpose of conforming to the common standardized peripheral device interface with a computer.

Regarding claim 11, Kawahara discloses everything claimed, as applied above (see claim 8); however, Kawahara fails to disclose converting image signals into digitalized forms using at least one analog-to-digital converter. However, the examiner takes official notice of the fact that it was well known in the art to provide converting image signals into digitalized forms using at least one analog-to-digital converter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing converting image signals into digitalized forms using at least one analog-to-digital converter, for the purpose of providing the image data in a digital format for use in a computer system.

Regarding claim 12, Kawahara discloses everything claimed, as applied above (see claim 11); however, Kawahara fails to disclose a digitalized image processor operatively connected to the analog-to-digital converter. However, the examiner takes

official notice of the fact that it was well known in the art to provide a digitalized image processor operatively connected to the analog-to-digital converter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing a digitalized image processor operatively connected to the analog-to-digital converter, for the purpose of being able to manipulate image data in a digital format for computer usage.

Regarding claim 17, Kawahara discloses everything claimed, as applied above (see claims 8); however, Kawahara fails to disclose wherein the interface is a USB-based interface. However, the examiner takes official notice of the fact that it was well known in the art to provide wherein the interface is a USB-based interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing wherein the interface is a USB-based interface, for the purpose of using a well-known interface.

Regarding claims 18, Kawahara discloses everything claimed, as applied above (see claims 8); however, Kawahara fails to disclose a light source to illuminate the object. However, the examiner takes official notice of the fact that it was well known in the art to provide a light source to illuminate the object.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing a light source to illuminate the object, for the purpose of using providing a light source for light-receiving elements that read picture information.

19. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Hasegawa et al. (US 6678076), hereinafter referred to as Hasegawa.

Regarding claim 36, Kawahara discloses an optical scanner comprising: a concatenated contact image-sensing module having a plurality of contact image sensor modules each operatively connected to another in series (column 2, lines 18-20 and figure 1b. More contact type linear image sensors could be connected in a similar fashion.); and a timing generator for providing a start pulse into an end contact image sensor module to trigger a corresponding document reading session thereof and output a corresponding image signal (column 2, lines 8-10, figure 1a and 1b. The clock signal sets a count or time for input of start and output of end signal.); and wherein the end contact image sensor module is located at one end of the series-connected contact image sensor modules (figure 1b). However, Kawahara fails to disclose wherein a portion of these contact image sensor modules is placed in a face-up manner and another portion is placed in a face-down manner; the optical scanner being capable of scanning a double sided document. However, the examiner maintains that it was well known in the art to provide wherein a portion of these CIS modules is placed in a face-up manner and another portion is placed in a face-down manner; thereby, the optical scanner being capable of scanning a double sided document, as taught by Hasegawa.

In a similar field of endeavor, Hasegawa discloses an image reading apparatus. In addition, Hasegawa discloses wherein a portion of these CIS modules is placed in a face-up manner and another portion is placed in a face-down manner; thereby, the

optical scanner being capable of scanning a double sided document (figure 10 and column 9, lines 10-20. Elements 217 and 221 are contact type image sensors that scan the face-up and face-down portions of a page; thus arranged in a face-up and face-down manner.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing wherein a portion of these CIS modules is placed in a face-up manner and another portion is placed in a face-down manner; thereby, the optical scanner being capable of scanning a double sided document, as taught by Hasegawa, for the purpose of automatically scanning both sides of a double-sided document.

Response to Arguments

20. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

21. Though the arguments remain moot, the examiner would still like to respond to some of the applicant's discussions, starting with regard to claim 1. The applicant claims that the "unique features" of the at least two contact image sensor modules activated in sequence makes reception of the image data by a software module different over that which is well known to those of ordinary skill in the art. “Unique features” is rather amorphous. The examiner suggests that, if the discussion with regard to the software reception is found unsatisfactory by the applicant, specific arguments be made against the prior art and well known understanding that point out how the “unique

features" of sequential output as defined by the claims differentiate the claimed invention from commonly understood reception of image signals by a computer system.

22. Regarding claim 7, the applicant proposes that a software module to cooperate with a number of contact image sensors makes the invention patentable over well known prior art. However, reception and use of multiple image signals from scanning to stitch together is well known in the art, as mentioned. Having the signals come from contact image sensors, from multiple scans, from separate image signals, etc. could all be received and manipulated in the same way. In addition, the applicant's admitted prior art points out that multiple signals from multiple contact image sensors are output through an appropriate interface to computers for further processing (fig. 4, pg. 2, lines 25-26).

23. Regarding claim 8, the "timing generator" represented by a "black box" for Kawahara discloses a start pulse and clock signals being provided to the contact sensors. This reads on the claim limitations. In addition, Kawahara discloses that a control signal is provided to prevent unnecessary consumption by the clock buffer (col. 1, lines 20-27), and as an improvement to prior art (fig. 3), the control has been added (fig. 1a). Therefore, en arguendo, the applicants concern about the clock buffer being on or off as a possible problem could be ameliorated by simply referring to the prior art or through an obvious modification.

24. Regarding claim 36, the applicant proposes that according to fig. 2 in Hasegawa, the two image sensors 117 and 121 are not "face to each other." However, such a feature is not recited in the claim. Applicant also claims that the sensors are both face

downward in order to scan the two sides of a page (the face-up and the face-down side, as disclosed in the discussion of the claim). Though the sensors appear to be aligned in a similar direction, they do teach respective scanning of the up and down sides of a page; thus, reading on the modules placed in a face-up *manner* and a face-down *manner*.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM C. STOREY whose telephone number is (571)270-3576. The examiner can normally be reached on Monday - Friday Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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